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=> d ide can l1

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2001 ACS
RN   50-99-7  REGISTRY
CN   D-Glucose (8CI, 9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   (+)-Glucose
CN   Anhydrous dextrose
CN   Cartose
CN   Cerelose
CN   Cerelose 2001
CN   Corn sugar
CN   D(+)-Glucose
CN   D-glucose
CN   Dextropur
CN   Dextrose
CN   Dextrosol
CN   Glucolin
CN   Glucose
CN   Glucosteril
CN   Goldsugar
CN   Grape sugar
CN   Maxim Energy Gel
CN   Staleydex 111
CN   Staleydex 333
CN   Sugar, grape
CN   Tabfine 097(HS)
CN   Vadex
FS   STEREOSEARCH
DR   8012-24-6, 8030-23-7, 162222-91-5, 165659-51-8, 50933-92-1, 80206-31-1
MF   C6 H12 O6
CI   COM
LC   STN Files:   ADISNEWS, AGRICOLA, ANABSTR, BEILSTEIN*, BIOBUSINESS, BIOSIS,
       BIOTECHNO, CA, CABA, CANCERLIT, CAOLD, CAPLUS, CASREACT, CBNB, CEN,
       CHEMCATS, CHEMINFORMRX, CHEMLIST, CHEMSAFE, CIN, CSCHEM, CSNB, DDFU,
       DETHERM*, DIOGENES, DIPPR*, DRUGU, EMBASE, GMELIN*, HSDB*, IFICDB,
       IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS, NAPRALERT, NIOSHTIC,
       PDLCOM*, PHARMASEARCH, PIRA, PROMT, RTECS*, SPECINFO, TOXCENTER, TOXLIT,
       TULSA, ULIDAT, USAN, USPATFULL, VETU, VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
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Absolute stereochemistry.
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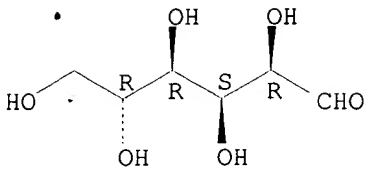

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1904 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
115916 REFERENCES IN FILE CAPLUS (1967 TO DATE)
14 REFERENCES IN FILE CAOLD (PRIOR TO 1967)

REFERENCE 1: 135:335201

REFERENCE 2: 135:335196

REFERENCE 3: 135:335186

REFERENCE 4: 135:335158

REFERENCE 5: 135:335157

REFERENCE 6: 135:335150

REFERENCE 7: 135:335080

REFERENCE 8: 135:335033

REFERENCE 9: 135:335013

REFERENCE 10: 135:334997

=> d ide can l2

L2 ANSWER 1 OF 1 REGISTRY COPYRIGHT 2001 ACS
RN 9004-10-8 REGISTRY
CN **Insulin (9CI)** (CA INDEX NAME)
OTHER NAMES:
CN Actrapid
CN Actrapid HM
CN Actrapid MC
CN Decurvon
CN Endopancrine
CN Iletin
CN Insular
CN Insulin Injection
CN Insulyl
CN Iszilin
DR 8049-67-0, 8049-95-4, 9004-12-0, 9045-63-0, 9045-65-2, 9045-66-3, 9045-67-4, 9066-39-1, 9066-40-4, 11081-38-2, 57126-42-8, 37243-75-7, 37294-43-2, 69090-47-7, 88026-11-3, 88026-12-4
MF Unspecified
CI PMS, COM, MAN
PCT Manual registration
LC STN Files: ADISNEWS, AGRICOLA, ANABSTR, BIOBUSINESS, BIOSIS, BIOTECHNO, CA, CABA, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CIN, CSCHEM, CSNB, DDFU, DIOGENES, DRUGU, EMBASE, HSDB*, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, NAPRALERT, NIOSHTIC, PDLCOM*, PHAR, PHARMASEARCH, PIRA, PROMT, RTECS*, TOXCENTER, TOXLIT, USAN, USPATFULL, VTB
(*File contains numerically searchable property data)
Other Sources: EINECS**, WHO

(**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
69517 REFERENCES IN FILE CA (1967 TO DATE)
1416 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
69598 REFERENCES IN FILE CAPLUS (1967 TO DATE)

REFERENCE 1: 135:335183

REFERENCE 2: 135:335149

REFERENCE 3: 135:335147

REFERENCE 4: 135:335111

REFERENCE 5: 135:335089

REFERENCE 6: 135:332192

REFERENCE 7: 135:332177

REFERENCE 8: 135:330911

REFERENCE 9: 135:330910

REFERENCE 10: 135:330899

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=> d all tot l79

L79 ANSWER 1 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:375303 HCAPLUS
DN **134:337912**
TI System for the **extrapolation** of **glucose** concentration for determining **insulin** dosage
IN Kalatz, Brit; Hoss, Udo
PA Roche Diagnostics G.m.b.H., Germany
SO Ger. Offen., 14 pp.

CODEN: GWXXBX
DT Patent
LA German
IC ICM A61B005-00
ICS A61B005-15; G01N033-48; G01N035-00
CC **9-1** (Biochemical Methods)
Section cross-reference(s): 14, 63
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10057215	A1	20010523	DE 2000-10057215	20001117
	JP 2001204817	A2	20010731	JP 2000-351415	20001117
PRAI	DE 1999-19955734	A1	19991118		

AB The invention concerns a system that contains units to record and store data on time and amt. of **insulin** administration, time and amt. of carbohydrate intake, measured **glucose** concn. values and time of measurement; the data are used in a formula to extrapolate **glucose** concn. and to det. the next **insulin** dosage. The system is integrated with the blood sampling unit and the **insulin** dosage unit; **insulin** dosage and carbohydrate intake control is based on the extrapolated data.
ST **glucose** concn extrapolation system **insulin** dosage **diabetes** mellitus
IT Medical goods
(**glucose** concn. extrapolation unit; system for extrapolation of **glucose** concn. for detg. **insulin** dosage)
IT **Algorithm**
Blood analysis
Diabetes mellitus
Diet
Process control
(system for extrapolation of **glucose** concn. for detg. **insulin** dosage)
IT **Carbohydrates, analysis**
RL: ANT (Analyte); FFD (Food or feed use); ANST (Analytical study); BIOL (Biological study); USES (Uses)
(system for extrapolation of **glucose** concn. for detg. **insulin** dosage)
IT **50-99-7**, D-**Glucose**, analysis
RL: **ANT (Analyte)**; THU (Therapeutic use); **ANST (Analytical study)**; BIOL (Biological study); USES (Uses)
(blood; system for extrapolation of **glucose** concn. for detg. **insulin** dosage)
IT **9004-10-8**, **Insulin**, biological studies
RL: BAC (Biological activity or effector, except adverse); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(system for extrapolation of **glucose** concn. for detg. **insulin** dosage)

L79 ANSWER 2 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:107374 HCAPLUS
DN 134:275986
TI A **model** for **glucose control** of **insulin secretion** during 24 h of free living
AU Mari, Andrea; Camastra, Stefania; Toschi, Elena; Giancaterini, Annalisa; Gastaldelli, Amalia; Mingrone, Geltrude; Ferrannini, Ele
CS C.N.R. Institute of Systems Science and Biomedical Engineering, Padua, Italy
SO Diabetes (2001), 50(Suppl. 1), S164-S168
CODEN: DIAEAZ; ISSN: 0012-1797
PB American Diabetes Association
DT Journal
LA English
CC 2-6 (Mammalian Hormones)
AB The aim of this work was to develop a math. model describing the functional dependence of **insulin** secretion on plasma

glucose concns. during 24 h of free living. Hourly central venous blood samples were obtained from a group of healthy volunteers who spent 24 h in a calorimetric chamber, where they consumed standardized meals. **Insulin** secretory rates were reconstructed from plasma C-peptide concns. by deconvolution. The relation between **insulin** release and plasma **glucose** concns. was modeled as the sum of three components: a static component (describing the dependence on plasma **glucose** concn. itself, with an embedded circadian oscillation), a dynamic component (modeling the dependence on **glucose** rate of change), and a residual component (including the fraction of **insulin** secretion not explained by **glucose** levels). The model fit of the individual 24-h secretion profiles was satisfactory (within the assigned exptl. error of **glucose** and C-peptide concns.). The static component yielded a dose-response function in which **insulin** release increased quasi-linearly (from 40 to 400 pmol/min on av.) over the range of 4-9 mmol/l **glucose**. The dynamic component was different from zero in coincidence with meal-related **glucose** excursions. The circadian oscillation and the residual component accounted for the day/night difference in the ability of **glucose** to stimulate **insulin** release. Over 24 h, total **insulin** release averaged 257 nmol (or 43 U). The static and dynamic component together accounted for .apprx.80% of total **insulin** release. The model proposed here provides a detailed robust description of **glucose**-related **insulin** release during free-living conditions. In **nondiabetic** subjects, non-**glucose**-dependent **insulin** release is a small fraction of total **insulin** secretion.

ST **insulin** secretion **glucose** math model

IT **Blood plasma**
Secretion (process)
Simulation and Modeling, physicochemical
(a math. model for **glucose** control of **insulin** secretion during a 24-h period of free living in humans)

IT Rhythm, biological
(circadian; a math. model for **glucose** control of **insulin** secretion during a 24-h period of free living in humans)

IT Pancreatic islet of Langerhans
(.beta.-cell; a math. model for **glucose** control of **insulin** secretion during a 24-h period of free living in humans)

IT **50-99-7**, D-**Glucose**, biological studies
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(a math. model for **glucose** control of **insulin** secretion during a 24-h period of free living in humans)

IT 59112-80-0, C-Peptide
RL: BOC (Biological occurrence); BUU (Biological use, unclassified); BIOL (Biological study); OCCU (Occurrence); USES (Uses)
(a math. model for **glucose** control of **insulin** secretion during a 24-h period of free living in humans)

IT **9004-10-8**, **Insulin**, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(a math. model for **glucose** control of **insulin** secretion during a 24-h period of free living in humans)

RE.CNT 14

RE

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L79 ANSWER 3 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:879828 HCAPLUS
DN **134:249162**
TI Novel control system for blood **glucose** using a **model predictive method**
AU Kan, Shugen; Onodera, Hisashi; Furutani, Eiko; Aung, Tun; Araki, Mituhiko; Nishimura, Haruo; Maetani, Shunzo; Imamura, Masayuki
CS Department of Surgery and Surgical Basic Science, Kyoto University, Kyoto, 606-8507, Japan
SO ASAIO J. (2000), 46(6), 657-662
CODEN: AJOUET; ISSN: 1058-2916
PB Lippincott Williams & Wilkins
DT Journal
LA English
CC **9-16** (Biochemical Methods)
Section cross-reference(s): 14
AB We developed a novel blood **glucose** control system, using a model predictive method, to achieve optimal control of the blood **glucose** level in severely **diabetic** or pancreatectomized patients. This system is designed to predict **glucose** level changes in advance, considering delayed response time and the administered doses of **insulin**. This method is also designed to calc. the most appropriate **insulin** infusion rate by considering differences in individual response to **insulin**. In this study, we compared our system with a conventional proportional and differential controller (PD controller) to det. whether the new system could regulate the **glucose** level efficiently in pancreatectomized dogs. The model predictive control method resulted in a significant redn. of mean **insulin** infusion rate compared with the conventional PD controller (0.71 mU/kg per min vs. 1.81 mU/kg per min, p = 0.0005), when the **glucose** level in both methods reached the planned target level (100 mg/dL). The new system also tended to have a reduced mean **glucose** infusion rate for compensating for overshooting of the **glucose** level compared with the PD controller (0.7 mg/kg per min vs. 1.1 mg/kg per min, p = 0.16). These results indicate that the new system should be a useful tool for regulating the **glucose** level in severely **diabetic** patients.
ST blood **glucose insulin** control system model
IT **Blood analysis**
Diabetes mellitus
Process control
Simulation and Modeling, biological
Simulation and Modeling, physicochemical
(control system for blood **glucose** using a model predictive method)
IT **50-99-7**, D-**Glucose**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(blood; control system for blood **glucose** using a model predictive method)
IT **9004-10-8**, **Insulin**, biological studies
RL: BAC (Biological activity or effector, except adverse); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(control system for blood **glucose** using a model predictive method)
RE.CNT 24
RE
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L79 ANSWER 4 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 2000:84269 HCAPLUS
DN **133:145188**
TI Validation of the **insulin** sensitivity **index** (ISI0,120): comparison with other **measures**
AU Gutt, M.; Davis, C. L.; Spitzer, S. B.; Llabre, M. M.; Kumar, M.; Czarnecki, E. M.; Schneiderman, N.; Skyler, J. S.; Marks, J. B.
CS Behavioral Medicine Research Center, University of Miami, Miami, FL, USA
SO Diabetes Res. Clin. Pract. (2000), 47(3), 177-184
CODEN: DRCPE9; ISSN: 0168-8227
PB Elsevier Science Ireland Ltd.
DT Journal
LA English
CC 2-6 (Mammalian Hormones)
Section cross-reference(s): 14
AB The purpose of this study was to explore possible calcns. using oral **glucose** tolerance test (OGTT) values to develop a simple measure of **insulin** sensitivity. A formula for an **insulin** sensitivity index, ISI0,120, that uses the fasting (0 min) and 120 min post-oral **glucose** (OGTT) **insulin** and **glucose** concns. was devised. It appears to be generalizable across a spectrum of **glucose** tolerance and obesity. Most importantly, the data show that ISI0,120 correlates well, when applied prospectively in comparative studies, with the **insulin** sensitivity index obtained from the **euglycemic** hyperinsulinemic clamp. This correlation was demonstrably superior to other indexes of **insulin** sensitivity such as the HOMA formula presented by Matthews, and performed comparably to the computerized HOMA index. Measurement of **insulin** sensitivity has traditionally been possible only in research settings because of the invasiveness and expense of the methods used. Clin. investigators have therefore sought more practical methods to obtain an index of **insulin** sensitivity. Such an index should approx. **insulin** sensitivity as measured by the **euglycemic** hyperinsulinemic clamp (M). Therefore, ISI0,120 is presented as a simple yet sensitive measure of **insulin** sensitivity which is adaptable for use in clin. settings as well as large epidemiol. studies.
ST **insulin** sensitivity oral **glucose** tolerance test calcn
IT **Diabetes** mellitus
Epidemiology
Mathematical methods
Obesity
Starvation, animal
(validation of **insulin** sensitivity index (ISI0,120) as a

measure of **insulin** sensitivity in humans)
IT Pancreatic islet of Langerhans
(.beta.-cell; validation of **insulin** sensitivity index (ISI0,120) as a measure of **insulin** sensitivity in humans)
IT **9004-10-8**, **Insulin**, biological studies
RL: BAC (Biological activity or effector, except adverse); BIOL (Biological study)
(validation of **insulin** sensitivity index (ISI0,120) as a measure of **insulin** sensitivity in humans)
IT **50-99-7**, D-**Glucose**, biological studies
RL: BPR (Biological process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
(validation of **insulin** sensitivity index (ISI0,120) as a measure of **insulin** sensitivity in humans)
RE.CNT 24
RE
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L79 ANSWER 5 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:593848 HCAPLUS
DN 131:308495
TI Noninvasive prediction of **glucose** by near-infrared diffuse reflectance spectroscopy
AU Malin, Stephen F.; Ruchti, Timothy L.; Blank, Thomas B.; Thennadil, Suresh N.; Monfre, Stephen L.
CS **Instrumentation Metrics, Incorporated, Tempe, AR, 85284, USA**
SO Clin. Chem. (Washington, D. C.) (1999), 45(9), 1651-1658
CODEN: CLCHAU; ISSN: 0009-9147
PB American Association for Clinical Chemistry
DT Journal
LA English
CC 9-5 (Biochemical Methods)
AB Background: Self-monitoring of blood **glucose** by **diabetics** is crucial in the redn. of complications related to **diabetes**. Current monitoring techniques are invasive and painful, and discourage regular use. The aim of this study was to demonstrate the use of near-IR (NIR) diffuse reflectance over the 1050-2450 nm wavelength range for noninvasive monitoring of blood **glucose**. Methods: Two approaches were used to develop calibration models for predicting the concn. of blood **glucose**. In the first approach, seven **diabetic** subjects were studied over a 35-day period with random

collection of NIR spectra. Corresponding blood samples were collected for analyte anal. during the collection of each NIR spectrum. The second approach involved three **nondiabetic** subjects and the use of oral **glucose** tolerance tests (OGTTs) over multiple days to cause fluctuations in blood **glucose** concns. Twenty NIR spectra were collected over the 3.5-h test, with 16 corresponding blood specimens taken for analyte anal. Results: Statistically valid calibration models were developed on three of the seven **diabetic** subjects. The mean std. error of prediction through cross-validation was 1.41 mmol/L (25 mg/dL). The results from the OGTT testing of three **nondiabetic** subjects yielded a mean std. error of calibration of 1.1 mmol/L (20 mg/dL). Validation of the calibration model with an independent test set produced a mean std. error of prediction equiv. to 1.03 mmol/L (19 mg/dL). Conclusions: These data provide preliminary evidence and allow cautious optimism that NIR diffuse reflectance spectroscopy using the 1050-2450 nm wavelength range can be used to predict blood **glucose** concns. noninvasively. Substantial research is still required to validate whether this technol. is a viable tool for long-term home diagnostic use by **diabetics.**

ST **diabetes glucose** near IR diffuse reflectance spectroscopy

IT **Blood analysis**
(**glucose**; noninvasive prediction of **glucose** by near-IR diffuse reflectance spectroscopy)

IT Diffuse reflectance IR spectroscopy
(near-IR; noninvasive prediction of **glucose** by near-IR diffuse reflectance spectroscopy)

IT **Diabetes** mellitus
(noninvasive prediction of **glucose** by near-IR diffuse reflectance spectroscopy)

IT **50-99-7**, D-**Glucose**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(anal.; noninvasive prediction of **glucose** by near-IR diffuse reflectance spectroscopy)

RE.CNT 27

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L79. ANSWER 6 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:370787 HCAPLUS
DN **131:153817**
TI **Assessment** of **insulin** sensitivity from plasma **insulin** and **glucose** in the fasting or post oral **glucose**-load state
AU Avignon, A.; Boegner, C.; Mariano-Goulart, D.; Colette, C.; Monnier, L.
CS Department of Metabolism, Lapeyronie Hospital, University Hospital of Montpellier, Montpellier, 34295, Fr.
SO Int. J. Obes. (1999), 23(5), 512-517
CODEN: IJOBDP; ISSN: 0307-0565
PB Stockton Press
DT Journal
LA English
CC 2-1 (Mammalian Hormones)
Section cross-reference(s): 14
AB Studies were carried out to compare **insulin** sensitivity indexes derived from plasma **insulin** (I) and **glucose** (G) in the basal state (Sib) and at the second hour (I2h and G2h) of an oral **glucose** tolerance test (OGTT, Si2h) (i) with measurements of **insulin** sensitivity using the **insulin** modified frequently sampled i.v. **glucose** tolerance test (FSIVGTT) [Si(IVGTT)] and (ii) with modeling of fasting **glucose** and **insulin** by the homeostasis model assessment (HOMA). Forty seven subjects entered the study, 31 subjects were classified as having normal **glucose** tolerance (NGT), 10 as having impaired tolerance to **glucose** (IGT) and six as type 2 **diabetes** mellitus according to the World Health Organization (WHO) criteria. Sib and Si2h were calcd. as follows: sib = 108/(I.times.G.times.VD), Si2h = 108/(I2hr.times.G2hr.times.VD) where VD is an est. of the apparent **glucose** distribution vol. A third **insulin** sensitivity index (SiM) was calcd. by averaging Sib and Si2h. HOMA was calcd. as follows: I/(22.5.times.e-InG). Si(IVGTT) Sib, SI2h and SiM were all significantly higher in subjects with NGT than in those with IGT or type 2 **diabetes**. Si(IVGTT) was highly correlated with the three **insulin** sensitivity indexes found in the total population, in subjects with NGT and in those with IGT. In type 2 **diabetic** patients, a significant correlation was only noted when SiM was tested against Si(IVGTT). In most circumstances, the assocns. of Si(IVGTT) with Sib, SI2h and SiM were stronger than the corresponding assocns. with Ib, I2h or HOMA. SiM was the index that correlated best with Si(IVGTT) in the whole group (r = 0.92) as well as in NGT (r = 0.86), IGT (r = 0.96) and type 2 **diabetes** (r = 0.83) subgroups. Calcns. of sensitivity indexes from G and I concns. in the basal state and during a conventional 2 h OGTT appear to be useful for coupling in the same simple and single test both a detn. of **glucose** tolerance and an est. of **insulin** sensitivity.
ST **insulin** sensitivity estn blood **glucose** fasting; **diabetes insulin** sensitivity estn blood **glucose** fasting
IT **Blood plasma**
Fasting
Simulation and Modeling, biological
Stomach content
(assessment of **insulin** sensitivity from plasma **insulin** and **glucose** in fasting or post oral **glucose**-load state in humans)
IT **Diabetes** mellitus
(non-**insulin**-dependent; assessment of **insulin** sensitivity from plasma **insulin** and **glucose** in fasting or post oral **glucose**-load state in humans in **diabetes**)
IT **9004-10-8, Insulin**, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BIOL (Biological study); PROC (Process)
(assessment of **insulin** sensitivity from plasma

insulin and **glucose** in fasting or post oral **glucose**-load state in humans)
IT **50-99-7**, D-**Glucose**, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(blood; assessment of **insulin** sensitivity from plasma **insulin** and **glucose** in fasting or post oral **glucose**-load state in humans)
IT **50-99-7**, D-**Glucose**, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BIOL (Biological study); PROC (Process)
(tolerance; assessment of **insulin** sensitivity from plasma **insulin** and **glucose** in fasting or post oral **glucose**-load state in humans)
RE.CNT 31
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L79 ANSWER 7 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1999:317872 HCAPLUS
DN **131:113372**
TI **Prediction** of blood **glucose** levels in **diabetic** patients using a hybrid AI technique
AU Liszka-Hackzell, Jan John
CS Department of Medical Informatics, University of Linkoping, Linkoping, S-581 83, Swed.
SO Comput. Biomed. Res. (1999), 32(2), 132-144
CODEN: CBMRB7; ISSN: 0010-4809
PB Academic Press
DT Journal
LA English
CC **9-16** (Biochemical Methods)
Section cross-reference(s): 14
AB One of the problems in the management of the **diabetic** patient is to balance the dose of **insulin** without exactly knowing how the

patient's blood **glucose** concn. will respond. Being able to predict the blood **glucose** level would simplify the management. This paper describes an attempt to predict blood **glucose** levels using a hybrid AI technique combining the principal component method and neural networks. With this approach, no complicated models or algorithms need be considered. The results obtained from this fairly simple model show a correlation coeff. of 0.76 between the obsd. and the predicted values during the first 15 days of prediction. By using this technique, all the factors affecting this patient's blood **glucose** level are considered, since they are integrated in the data collected during this time period. It must be emphasized that the present method results in an individual model, valid for that particular patient under a limited period of time. However, the method itself has general validity, since the blood **glucose** variations over time have similar properties in any **diabetic** patient. (c) 1999 Academic Press.

ST blood **glucose diabetic** hybrid AI technique

IT **Blood analysis**
(**glucose**; prediction of blood **glucose** levels in **diabetic** patients using a hybrid AI technique)

IT **Simulation and Modeling, physicochemical**
(neural network; prediction of blood **glucose** levels in **diabetic** patients using a hybrid AI technique)

IT **Algorithm**
Blood analysis
Diabetes mellitus
Principal component analysis
(prediction of blood **glucose** levels in **diabetic** patients using a hybrid AI technique)

IT **50-99-7**, D-**Glucose**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(anal.; prediction of blood **glucose** levels in **diabetic** patients using a hybrid AI technique)

IT **50-99-7**, D-**Glucose**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(prediction of blood **glucose** levels in **diabetic** patients using a hybrid AI technique)

RE.CNT 11

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L79 ANSWER 8 OF 19 HCAPLUS COPYRIGHT 2001 ACS

AN 1999:135211 HCAPLUS

DN **130:347663**

TI Controlled oral **glucose tolerance** test: evaluation of **insulin** resistance with an **insulin** infusion **algorithm** that forces the OGTT **glycemic curve** within the normal range. A feasibility study

AU Volpicelli, G.; Iannello, S.; Belfiore, F.

CS Chair of Internal Medicine, Institute of Medicina Interna e Specialita Internistiche, Medical School, University of Catania, Catania, Italy

SO Clin. Physiol. (1999), 19(1), 32-44
CODEN: CLPHDU; ISSN: 0144-5979

PB Blackwell Science Ltd.
DT Journal
LA English
CC 2-6 (Mammalian Hormones)
Section cross-reference(s): 14
AB This is a tech. study to show the feasibility of a computer-controlled oral **glucose** tolerance test (OGTT) using a specific algorithm, consisting of an OGTT carried out while **insulin** is infused as required to keep **glycemia** within the normal range (National **Diabetes** Data Group 1979 criteria). This technique allows (a) the amt. of **insulin** (**insulin** area) required to maintain a normal **glycemic** curve to be assessed, a parameter indicating the degree of **insulin** resistance; and (b) the unique parameter consisting of the **insulin** secretory response (C-peptide) to a normal **glycemic** curve under the inhibitory feedback exerted by the **insulin** levels required to maintain normal **glycemia** to be obtained. Preliminary results confirmed the feasibility of this approach by showing that during the test while the **glycemic** area was kept normal the insulinemic area (endogenous + infused **insulin**) increased markedly in obese and obese **diabetic** subjects compared with normal subjects, with values of 145.10, 204.75 and 68.25 nmol I-1 min-1 resp. (in both instances). In contrast, endogenous **insulin** secretion (C-peptide level) remained almost unchanged. Compared with data in normal subjects, free fatty acid (FFA) values were basally elevated in the obese and obese **diabetic** patients, and underwent a smaller decrease during the test. The FFA area were greater than normal in both groups of patients, suggesting that FFAs were not fully suppressible despite the highest possible **insulin** levels (higher **insulin** levels would produce **hypoglycemia**). The computer-controlled OGTT might be useful for the metabolic study of patients in the clin. setting.
ST **glucose** tolerance test algorithm **insulin** resistance
IT **Algorithm**
Computer application
Diabetes mellitus
Diagnosis
Insulin resistance
Obesity
(computer-controlled oral **glucose** tolerance test for evaluation of **insulin** resistance in relation to normal, obese and obese **diabetic** humans)
IT **Blood glucose**
Fatty acids, biological studies
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(computer-controlled oral **glucose** tolerance test for evaluation of **insulin** resistance in relation to normal, obese and obese **diabetic** humans)
IT **9004-10-8, Insulin**, biological studies
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); BIOL (Biological study); PROC (Process)
(computer-controlled oral **glucose** tolerance test for evaluation of **insulin** resistance in relation to normal, obese and obese **diabetic** humans)
IT 59112-80-0, Proinsulin C-peptide
RL: BPR (Biological process); BIOL (Biological study); PROC (Process)
(computer-controlled oral **glucose** tolerance test for evaluation of **insulin** resistance in relation to normal, obese and obese **diabetic** humans)
IT **50-99-7**, D-**Glucose**, biological studies
RL: BPR (Biological process); BSU (Biological study, unclassified); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
(computer-controlled oral **glucose** tolerance test for evaluation of **insulin** resistance in relation to normal, obese and obese **diabetic** humans)
RE.CNT 46
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L79 ANSWER 9 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:668068 HCAPLUS
DN **129:287543**
TI Diabetes management system and method for controlling blood **glucose**
IN Worthington, David R. L.; Brown, Stephen J.
PA Health Hero Network, USA
SO U.S., 22 pp. Cont.-in-part of U.S. Ser. No. 781,278.
CODEN: USXXAM
DT Patent
LA English
IC ICM G01N033-50
NCL 702019000
CC **9-1** (Biochemical Methods)
Section cross-reference(s): 1, 13, 14
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5822715	A	19981013	US 1997-844245	19970418

US 5956501 A 19990921 US 1997-781278 19970110
PRAI US 1997-781278 A2 19970110
AB This invention describes a diabetes management system for predicting a future blood **glucose** value of a patient and for recommending a corrective action to the patient when the future blood **glucose** value lies outside of a target range. The system includes a patient-operated app. for measuring blood **glucose** values and for storing data relating to **insulin** doses administered to the patient. The app. predicts the patient's future blood **glucose** value based upon the patient's current blood **glucose** value, the fraction of **insulin** action remaining from the **insulin** doses, and the patient's **insulin** sensitivity. The app. also dets. the corrective action for the patient when the predicted blood **glucose** value lies outside of a target range. The system also includes a physician computer in communication with the app. for receiving the blood **glucose** values and **insulin** dose data and for calcg. an adjusted **insulin** sensitivity for use in subsequent predictions. The diabetes management system of the present invention provides a significant improvement over conventional diabetes management systems by alerting the patient to the possible development of hypoglycemia or hyperglycemia between meals, thereby allowing the patient to take early corrective action.
ST diabetes management system app blood **glucose**
IT Analytical apparatus
Apparatus
(blood **glucose** analyzer; diabetes management system and method for controlling blood **glucose**)
IT Information retrieval
(computerized; diabetes management system and method for controlling blood **glucose**)
IT **Blood**
Blood analysis
Blood glucose analysis
Computers
Diabetes mellitus
Hyperglycemia
Hypoglycemia
Memory devices
(diabetes management system and method for controlling blood **glucose**)
IT **Blood glucose**
RL: ANT (Analyte); BOC (Biological occurrence); ANST (Analytical study); BIOL (Biological study); OCCU (Occurrence)
(diabetes management system and method for controlling blood **glucose**)
IT **Carbohydrates, biological studies**
RL: BSU (Biological study, unclassified); FFD (Food or feed use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(diabetes management system and method for controlling blood **glucose**)
IT Communication
(telecommunication; diabetes management system and method for controlling blood **glucose**)
IT **50-99-7**, D-**Glucose**, analysis
RL: **ANT (Analyte)**; BOC (Biological occurrence); **ANST (Analytical study)**; BIOL (Biological study); OCCU (Occurrence)
(diabetes management system and method for controlling blood **glucose**)
IT **9004-10-8, Insulin**, biological studies 133107-64-9, **Insulin** lispro
RL: BAC (Biological activity or effector, except adverse); BPR (Biological process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)
(diabetes management system and method for controlling blood **glucose**)

L79 ANSWER 10 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:176130 HCAPLUS
DN 128:190152
TI Procedure and device for **patient** specific daily profiles of blood sugar taking into account the effects of **insulin** dosage and diet
IN Salzsieder, Eckhard; Rutscher, Alexander
PA Salzsieder, Eckhard, Germany; Rutscher, Alexander
SO Ger. Offen., 8 pp.
CODEN: GWXXBX
DT **Patent**
LA German
IC ICM G01N033-66
CC **9-1** (Biochemical Methods)
Section cross-reference(s): **18**
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19634577	A1	19980305	DE 1996-19634577	19960827

AB The invention concerns a multistep procedure and device to calc. and interpret the daily blood sugar concn. profile of individuals by using data from blood sugar measurements, **insulin** dosage, and diet and applying a series of algorithms.
ST **diabetes** device blood sugar **insulin** diet
IT **Algorithm**
Biological simulation
Blood glucose analysis
Computer application
Diabetes mellitus
Diabetes mellitus diagnosis
Diet
Medical goods
(procedure and device for **patient** specific daily profiles of blood sugar taking into account effects of **insulin** dosage and food intake)
IT Diet
(therapeutic; procedure and device for **patient** specific daily profiles of blood sugar taking into account effects of **insulin** dosage and food intake)
IT **9004-10-8, Insulin,** biological studies
RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)
(procedure and device for **patient** specific daily profiles of blood sugar taking into account effects of **insulin** dosage and food intake)

L79 ANSWER 11 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1994:404464 HCAPLUS
DN **121:4464**
TI **Computer**-controlled OGTT
AU Belfiore, Francesco; Volpicelli, Giovanni; Iannello, Silvia; Campione, Rosa
CS Inst. Clin. Med. I, Univ. Catania Med. Sch., Catania, Italy
SO Front. Diabetes (1993), 12(CURRENT TOPICS IN DIABETES RESEARCH), 76-85
CODEN: FDIADJ; ISSN: 0251-5342
DT Journal
LA English
CC 9-16 (Biochemical Methods)
Section cross-reference(s): 14
AB To measure **insulin** resistance under physiol. conditions, the computer-controlled OGTT was developed which consists of an oral **glucose** load test executed while an **insulin** delivery system infuses **insulin** according to a particular algorithm to force the **glycemic** curve to remain within the normal range of values. Simultaneous measurement of free fatty acids allows evaluation also of the **insulin** resistance concerning blood free fatty acids in addn. to the **insulin** resistance concerning blood

glucose level. The test permits measurement of some important parameters, including: the insulinemic area required to maintain the OGTT **glycemic** curve within normal values even in **diabetic** patients; the whole body **insulin** resistance calcd from the insulinemic, **glycemic**, and free fatty acid areas, according to a given formula; the **insulin** secretory response (as indicated by C-peptide values) to a normal **glycemic** curve; and the time course of the above parameters during the test.

ST computer controlled oral **glucose** tolerance test

IT **Diabetes** mellitus
(computer-controlled oral **glucose** tolerance test in, in humans)

IT **Algorithm**
(for **insulin** infusion during computer-controlled oral **glucose** tolerance test in humans)

IT **Blood sugar**
Fatty acids, biological studies
RL: BIOL (Biological study)
(**insulin** resistance detn. by computer-controlled oral **glucose** tolerance test in relation to, in humans)

IT **9004-10-8, Insulin**, biological studies
RL: BIOL (Biological study)
(resistance to, computer-controlled oral **glucose** tolerance test for detn. of, in humans)

IT **50-99-7**, D-**Glucose**, biological studies
RL: BIOL (Biological study)
(tolerance test, oral, computer-controlled, in humans)

L79 ANSWER 12 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1993:18844 HCAPLUS
DN **118:18844**
TI Apparatus and **method** for **glucose** loading test for **diabetes** diagnosis
IN Arita, Seizaburo
PA Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM A61B010-00
ICS G01N033-50
CC **9-1** (Biochemical Methods)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04256744	A2	19920911	JP 1991-38858	19910212

PI JP 04256744 A2 19920911 JP 1991-38858 19910212

AB An app. (or method) for **glucose** loading test for **diabetes** diagrams involves a device (or process) for the input of blood sugar values and **insulin** values (detd. by the oral sugar loading test) from 0 h to a given period of time, a device (or process) for judging the normal type, borderline type, or **diabetic** type based on the 2-dimensional diagram of blood sugar values vs. **insulin** values with respect to time lapses, obtained from the input, and a device (computer) for the output of the result based on the diagram judgement.

ST **glucose** loading test **diabetes** app

IT **Mathematics**
(coordinates, of blood sugar vs. **insulin** values, in blood sugar loading test, for **diabetes** diagram)

IT **Diabetes** mellitus
(diagram of, blood sugar loading test for, app. and method for, blood sugar vs. **insulin** coordinates in relation to)

IT Computer application
(in app. for blood sugar loading test for **diabetes** diagram, blood sugar vs. **insulin** coordinates in relation to)

IT **Blood sugar**

(loading test, for **diabetes** diagrams, app. and method for, blood sugar vs. **insulin** coordinates in relation to)
IT **Blood analysis**
(sugar loading test for, for **diabetes** diagrams, app. and method for, blood sugar vs. **insulin** coordinates in relation to)
IT **50-99-7, Glucose**, analysis **9004-10-8, Insulin**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(detn. of, in blood sugar loading test, app. and method for, blood sugar vs. **insulin** coordinates in relation to)

L79 ANSWER 13 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1992:422839 HCAPLUS
DN **117:22839**
TI Cubic spline fit for data of oral **glucose tolerance** test and **insulin** releasing test and their clinical significances
AU Wen, Jianxin; Luo, Hongbin; Liao, Eryuan; Chao, Chusheng; Wu, Hanwen
CS Endocrine Res. Lab., Hunan Med. Univ., Changsha, Peop. Rep. China
SO Hunan Yike Daxue Xuebao (1992), 17(1), 29-32, 36
CODEN: HYXBET
DT Journal
LA Chinese
CC 9-16 (Biochemical Methods)
Section cross-reference(s): 13, 14
AB The data of the oral **glucose** tolerance test (OGTT) and **insulin**-releasing test (IRT) were fitted with the cubic spline function as well as a microcomputer program. The fitting ability was discussed by a statistical method. The total efficiency of fitting results for the curves of OGTT and IRT were 91 and 79%, resp. It gave 2 equations and a lot of characterized consts. that might be useful for the diagnosis and classification of **diabetes** mellitus. Moreover, it could provide some basic data for the dynamic research of **insulin** secretion.
ST **diabetes** diagnosis **glucose** tolerance **insulin** release; math function computer program **diabetes** test
IT **Mathematics**
(cubic spline function, for oral **glucose** tolerance and **insulin** releasing tests in **diabetes** diagnosis)
IT **Diabetes** mellitus
(diagnosis of, oral **glucose** tolerance and **insulin** releasing tests for, cubic spline function and computer program in)
IT Computer program
(for oral **glucose** tolerance and **insulin** releasing tests in **diabetes** diagnosis)
IT **9004-10-8, Insulin**, biological studies
RL: BIOL (Biological study)
(releasing test for, in diagnosis of **diabetes**, cubic spline function and computer program in)
IT **50-99-7, Glucose**, biological studies
RL: BIOL (Biological study)
(tolerance test for, in diagnosis of **diabetes**, cubic spline function and computer program in)

L79 ANSWER 14 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1992:169683 HCAPLUS
DN **116:169683**
TI **Method** for diagnosis of **diabetes** mellitus
IN Korolyuk, I. P.; Bykhovskaya, E. Yu.
PA Kuibyshev State Medical Institute, USSR
SO U.S.S.R.
From: Otkrytiya, Izobret. 1991, (33), 163.
CODEN: URXXAF
DT Patent
LA Russian
IC ICM G01N033-68

CC **9-16** (Biochemical Methods)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 1675774	A1	19910907	SU 1985-3907691	19850610

AB In a **glucose** tolerance test for **diabetes** mellitus, immunoreactive **insulin** and the content of C-peptide in both plasma and erythrocytes are detd. A math. formula is given for an index for diagnosis of **diabetes**.
ST **diabetes** diagnosis **insulin** C peptide; math equation **diabetes** diagnosis
IT **Blood analysis**
(C-peptide detn. in, in **diabetes** mellitus diagnosis)
IT **Erythrocyte**
(C-peptide in plasma and, in **diabetes** mellitus diagnosis)
IT **Diabetes** mellitus
(diagnosis of, **glucose** tolerance test for, C-peptide and immunoreactive **insulin** detn. in)
IT **Mathematics**
(equations, for **diabetes** mellitus diagnosis)
IT **9004-10-8, Insulin**, analysis
RL: ANST (Analytical study)
(detn. of **glucose** tolerance and immunoreactive, , in **diabetes** mellitus diagnosis)
IT **50-99-7, Glucose**, analysis
RL: ANST (Analytical study)
(detn. of tolerance of, in **diabetes** mellitus diagnosis)
IT 59112-80-0, c-Peptide
RL: ANT (Analyte); ANST (Analytical study)
(detn. of, in plasma and erythrocyte, in **diabetes** mellitus diagnosis)

L79 ANSWER 15 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1988:507352 HCAPLUS
DN **109:107352**
TI The degree and the rate of **glucose** absorption from carbohydrate-containing food and in oral **tolerance** test
AU Dreval, A. V.
CS IMMI, Moscow, USSR
SO Lab. Delo (1988), (6), 33-8
CODEN: LABDAZ; ISSN: 0023-6748
DT Journal
LA Russian
CC 9-15 (Biochemical Methods)
Section cross-reference(s): 14
AB Math. equations are presented and discussed for identifying parameters of **glucose** kinetics under carbohydrate loading test which consider prodn. of **glucose** by the liver. These allow calcn. of the degree and the rate of **glucose** absorption in an oral **glucose** tolerance test and during intake of carbohydrate-contg. food-product. The relative bioavailability of **glucose** from ice cream did not exceed 50%, which allows its use in the diets of persons with **diabetes** mellitus. The liver uptake of **glucose** was .apprx.60% in oral **glucose** tolerance test and its half-absorption period was 10.6 min.
ST **glucose** absorption oral tolerance test; **diabetes** **glucose** absorption oral tolerance test
IT **Diabetes** mellitus
(math. equations for study of **glucose** absorption during oral tolerance test in relation to)
IT Biological transport
(absorption, of **glucose**, during oral tolerance test, math. equations for study of)
IT **Mathematics**
(equations, for **glucose** absorption study during oral tolerance test)

IT **50-99-7, Glucose**, biological studies
RL: BIOL (Biological study)
(absorption of, during oral tolerance test, math. equations for study of)

L79 ANSWER 16 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1981:477730 HCAPLUS
DN **95:77730**
TI Correlation between **glycemic** and **insulin** **curves**
AU Balsano, Francesco; Bonavita, M. Simona; Cumo, Maurizio; Ferrari, Giuseppe
CS Policlin. "Umberto I", Univ. Roma, Rome, 00100, Italy
SO Quad. Sclavo Diagn. Clin. Lab. (1981), 17(2), 216-29
CODEN: QSDCAJ; ISSN: 0033-4979
DT Journal
LA English
CC 13-5 (Mammalian Biochemistry)
AB A math. model is presented for the relation between blood sugar and **insulin** curves after a given **glucose** dose. The model which gave the best representation for the exptl. data is that the rate of **insulin** consumption is directly proportional to the **glycemic** level. This was deduced from a simple functional relation dependent upon elementary biophys. mechanisms. This model will aid in the rapid formulation of an **insulin** curve from a given blood sugar curve.
ST **glucose insulin** blood model
IT **Simulation model**
(for **glucose** and **insulin** of blood)
IT **Blood sugar**
(**glucose** effect on, model for, **insulin** in relation to)
IT **Blood**
(**insulin** of, **glucose** effect on, model for)
IT **50-99-7**, biological studies
RL: BIOL (Biological study)
(blood sugar and **insulin** response to, model for)
IT **9004-10-8**, biological studies
RL: BIOL (Biological study)
(of blood, **glucose** effect on, model for)

L79 ANSWER 17 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1980:53726 HCAPLUS
DN **92:53726**
TI A **theoretical model** to **predict** the behavior of glycosylated hemoglobin levels
AU Beach, Kirk W.
CS Dep. Surg., Univ. Washington, Seattle, WA, 98195, USA
SO J. Theor. Biol. (1979), 81(3), 547-61
CODEN: JTBIAP; ISSN: 0022-5193
DT Journal
LA English
CC 6-3 (General Biochemistry)
Section cross-reference(s): 13, 14
AB The measurement of glycosylated Hb as a percentage of total Hb is rapidly becoming the std. method of monitoring the av. blood sugar level in **diabetics**. Speculation exists in the literature about the nature of the glycosylation reaction. Most experimenters expect a linear relation between the plasma **glucose** level and percent glycosylated Hb in whole blood; however, a curve of decreasing slope with increasing **glucose** concn. is found. A reaction model including simple 1st order kinetics between **glucose** and Hb and a finite erythrocyte life of 120 days is considered. By carrying out the integration for each erythrocyte cohort followed by an integration combining all cohorts, a curve corresponding to the exptl. result is found. In addn., results on expected glycosylated Hb percent as a function of erythrocyte age and plasma **glucose** concn. are

presented as well as a plot of **glucose** concn. vs. glycosylated Hb percent for the 40-day erythrocyte life in mice. All of the results correlate with exptl. values in the literature if a rate const. of k = 1.0 ..times. 10-5 dL mg-1 day is used. The evaluation of a published radioactive iron-transferrin expt. reveals the possibility that the glycosylation reaction begins during erythropoiesis. Finally, a curve is displayed which shows the expected 120-day decay during **normoglycemia**, of an elevated glycosylated Hb level resulting from a preceding period of const. **hyperglycemia**.

ST glycosylated Hb model **diabetes**

IT **Simulation model**
(for glycosylated Hb levels, in **diabetes**)

IT **Hyperglycemia**
(glycosylated Hb level and blood sugar in **diabetes** in relation to)

IT **Blood sugar**
(glycosylated Hb levels in relation to, in **diabetes**, simulation of)

IT **Erythrocyte**
(glycosylated Hb levels in, in **diabetes**, simulation of)

IT **Diabetes** mellitus
(glycosylated Hb levels in, simulation of, blood **glucose** in relation to)

IT Hemoglobins
RL: BIOL (Biological study)
(glycosylated, simulation of levels of, blood **glucose** in **diabetes** in relation to)

L79 ANSWER 18 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1979:529009 HCAPLUS
DN **91:129009**
TI **Algorithm** for extracorporeal blood **glucose** regulation
AU Kruse-Jarres, J. D.; Bresch, M.; Lehmann, U.
CS Klin.-Chem. Exp. Lab., Chirur. Universitaetsklin. Freiburg/Br., Freiburg/Br., Fed. Rep. Ger.
SO J. Clin. Chem. Clin. Biochem. (1979), 17(7), 465-9
CODEN: JCCBDT; ISSN: 0340-076X
DT Journal
LA German
CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 9
AB A control mechanism is described, based on a simple proportional-differential regulation. The calcn. takes 1 min, and it takes into account **glucose** degrdn., **insulin** half-life in vivo, and the delay between blood sampling and **insulin** action on the blood **glucose** value. This is repeated continuously every minute (short-time mode) or every 5 min or more (long-time mode), depending on the rate of change of the blood **glucose**. Operator decision is based on digitally converted tables, which are analogous to the graph of proportional control, and on **glucose** equiv. tables, which give **insulin** effect on **glucose** as a function of time.

ST blood sugar extracorporeal regulation computer; **insulin** blood sugar computer; artificial pancreas blood sugar computer

IT **Diabetes** mellitus
(artificial pancreas in, algorithm for blood **glucose** extracorporeal regulation in relation to)

IT **Algorithm**
(for blood **glucose** extracorporeal regulation)

IT **Blood sugar**
(regulation of, extracorporeal, computer program for)

IT Computer application
(to blood sugar extracorporeal regulation, with artificial pancreas)

IT Pancreas
(artificial, blood sugar extracorporeal regulation by, computerized)

IT **9004-10-8**, biological studies
RL: BIOL (Biological study)

(blood sugar regulation with, computerized extracorporeal regulation in relation to)

L79 ANSWER 19 OF 19 HCAPLUS COPYRIGHT 2001 ACS
AN 1978:439926 HCAPLUS
DN **89:39926**
TI Derivation and experimental proof of a new **algorithm** for the artificial B-cell based on the **individual analysis** of the physiological **insulin-glucose** relationship
AU Fischer, U.; Jutzi, E.; Freyse, E. J.; Salzsieder, E.
CS Cent. Inst. Diabetes "Gerhardt Katsch", Karlsburg, E. Ger.
SO Endokrinologie (1978), 71(1), 65-75
CODEN: ENDKAC; ISSN: 0013-7251
DT Journal
LA English
CC 13-2 (Mammalian Biochemistry)
Section cross-reference(s): 2, 14
AB Normal dogs were submitted to oral **glucose** loads or to i.v. **glucose** infusions. **Insulin** secretion rates (CISR) were calcd. considering the resulting peripheral venous concn. differences in short intervals and the exptl. detd. half life and apparent distribution space of exogenous **insulin**. Multiple regression anal. was done between CISR and both the level and the rate of change of plasma **glucose**. The regression coeffs. were used as algorithm parameters for continuous plasma **glucose**-dependent i.v. **insulin** administration in the same animals after induction of an **insulin** -dependent **diabetes**. Normal **glycemic** regulation over the day could be restored by this system. The **insulin** responsiveness, however, varied from day to day. By using this **insulin** dosage pattern, nearly normal plasma **glucose** curves and slightly elevated **insulin** reactions after **glucose** loading were obsd. This kind of algorithm could also be used in **diabetic** humans.
ST **insulin** secretion math model
IT **Algorithm**
(for **insulin** continuous therapy in **diabetes** mellitus)
IT **Blood sugar**
(**insulin** secretion in response to, math model for)
IT **Diabetes** mellitus
(**insulin** therapy in, continuous, algorithm for)
IT **9004-10-8**, biological studies
RL: BIOL (Biological study)
(secretion of, in response to blood sugar, math model for)

=> fil biosis
FILE 'BIOSIS' ENTERED AT 09:16:10 ON 26 NOV 2001
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FILE COVERS 1969 TO DATE.
CAS REGISTRY NUMBERS AND CHEMICAL NAMES (CNs) PRESENT
FROM JANUARY 1969 TO DATE.

RECORDS LAST ADDED: 21 November 2001 (20011121/ED)

The BIOSIS file has been reloaded. Enter HELP RLOAD and HELP REINDEXING for details.

=> d all tot

L98 ANSWER 1 OF 2 BIOSIS COPYRIGHT 2001 BIOSIS
AN 1994:16062 BIOSIS
DN PREV199497029062
TI Mathematical methods to **calculate** the glycemic index of carbohydrate food load in patients with insulin-dependent diabetes

mellitus.
AU Dreval', A. V.; Batashova, M. G.
CS Inst. Nutr., Acad. Med. Sci. Russ., Moscow Russia
SO Problemy Endokrinologii, (1993) Vol. 39, No. 3, pp. 13-18.
ISSN: 0375-9660.
DT Article
LA Russian
SL English
AB The authors analyze the methodologic problem of calculating the glycemic indexes in patients with insulin-dependent diabetes mellitus (IDDM) administered substitution insulin therapy. They demonstrate that postalimentary glycemic curves in IDDM may essentially differe from those in health. Eight characteristic types of postalimentary glycemic curves observed in IDDM patients were singled out, and simple and therefore fairly available for clinicians methods of automated (making use of programmed microcalculators) calculation of the glycemic indexes have been developed for each of these types. Interpretations of abnormal curves are suggested as are possible approaches to an anaysis of such data. The authors believe that the developed methods of calculation of glycemic indexes will help rapidly create a Russian data bank of foodstuffs recommended for diabetics.
CC **Mathematical Biology and Statistical Methods *04500**
Clinical Biochemistry; General Methods and Applications *10006
Biochemical Studies - Proteins, Peptides and Amino Acids 10064
Biochemical Studies - Carbohydrates 10068
Biophysics - Biocybernetics *10515
Pathology, General and Miscellaneous - Therapy *12512
Metabolism - Carbohydrates *13004
Metabolism - Proteins, Peptides and Amino Acids *12012
Nutrition - Carbohydrates *13220
Food Technology - Evaluations of Physical and Chemical Properties *13530
Endocrine System - Pancreas *17008
BC Hominidae *86215
IT Major Concepts
Clinical Chemistry (Allied Medical Sciences); Endocrine System (Chemical Coordination and Homeostasis); Foods; Mathematical Biology (Computational Biology); Metabolism; Models and Simulations (Computational Biology); Nutrition; Pathology
IT Chemicals & Biochemicals
INSULIN
IT Miscellaneous Descriptors
DIET; PROGRAMMED MICROCALCULATOR
ORGN Super Taxa
Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
human (Hominidae)
ORGN Organism Superterms
animals; chordates; humans; mammals; primates; vertebrates
RN **9004-10-8** (INSULIN)

L98 ANSWER 2 OF 2 BIOSIS COPYRIGHT 2001 BIOSIS
AN 1981:181811 BIOSIS
DN BA71:51803
TI **DIAGNOSTIC VALUE** OF THE ORAL GLUCOSE TOLERANCE TEST EVALUATED WITH A **MATHEMATICAL MODEL.**
AU JANSSON L; LINDSKOG L; NORDEN N E; CARLSTROM S; SCHERSTEN B
CS DEP. CLINICAL CHEM., UNIV. HOSP., LUND, SWEDEN.
SO COMPUT BIOMED RES, (1980) 13 (6), 512-521.
CODEN: CBMRB7. ISSN: 0010-4809.
FS BA; OLD
LA English
AB The dynamics of the blood glucose concentration during the oral glucose tolerance test are different from normal in at least 96% of patients with diabetes mellitus. This is shown by using stepwise linear discriminant analysis and a **mathematical model** of the glucose homeostasis for the analysis of the glucose curves in 378 cases. The

mathematical model gives an estimate of the rate of intestinal glucose resorption, and this information was used to significantly improve the discrimination between diabetes mellitus and the normal state. The same estimate was useful for the detection of oxyhyperglycemia and malabsorption. The effect of age on glucose tolerance was included in the discriminant analysis. The intra-individual biological variation in cases with borderline glucose tolerance was 11%.

CC **Mathematical Biology and Statistical Methods *04500**
Clinical Biochemistry; General Methods and Applications *10006
Comparative Biochemistry, General 10010
Biochemical Studies - Carbohydrates 10068
Biophysics - Biocybernetics *10515
Metabolism - Carbohydrates *13004
Metabolism - Metabolic Disorders *13020
Nutrition - Malnutrition; Obesity 13203
Digestive System - Physiology and Biochemistry 14004
Digestive System - Pathology 14006
Endocrine System - Pancreas *17008
Developmental Biology - Embryology - Morphogenesis, General 25508
BC Hominidae 86215
IT Miscellaneous Descriptors
HUMAN DIABETES MELLITUS OXY HYPER GLYCEMIA INTESTINAL GLUCOSE RESORPTION MAL ABSORPTION AGE EFFECT
RN **50-99-7** (GLUCOSE)

=> d his

(FILE 'HOME' ENTERED AT 07:46:33 ON 26 NOV 2001)
SET COST OFF

FILE 'REGISTRY' ENTERED AT 07:46:44 ON 26 NOV 2001
L1 1 S 50-99-7
L2 1 S INSULIN/CN

FILE 'HCAPLUS' ENTERED AT 07:47:00 ON 26 NOV 2001
L3 116445 S L1
L4 69479 S L2
E HOCKERSMITH L/AU
E INSTRUMENTATION/PA,CS
E INSTRUMENTATION METRIC/PA,CS
L5 13 S E5-E8
L6 5 S L3,L4 AND L5
L7 8 S (GLUCOSE OR INSULIN) AND L5
L8 1 S L6 AND ?DIABET?
L9 0 S L6 AND (?GLYCEM? OR ?GLYCAEM? OR ?GLYCEAM?)
L10 1 S L6,L7 AND L8

FILE 'BIOSIS' ENTERED AT 07:53:41 ON 26 NOV 2001
E HOCKERSMITH/AU

FILE 'MEDLINE' ENTERED AT 07:53:58 ON 26 NOV 2001
E HOCKERSMITH/AU

FILE 'HCAPLUS' ENTERED AT 07:54:14 ON 26 NOV 2001
E CARBOHYDRATE/CW
L11 75757 S E3,E4
E CARBOHYDRATE/CT
L12 1045347 S E25+NT
E E11+ALL
E E2
L13 42853 S E16
L14 42767 S E66-E82
L15 32200 S E83-E101
L16 116445 S L11-L15 AND L3
L17 30872 S L11-L15 AND L4

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L18      164984 S L11-L15 AND GLUCOSE
L19       40905 S L11-L15 AND INSULIN
L20      180875 S L16-L19
                E MATHEMATIC/CT
                E E5+ALL
L21          46 S L20 AND E3-E5
L22         295 S L20 AND E2+NT
L23         337 S L21,L22
                E BLOOD ANALYSIS/CT
                E E3+ALL
L24      107304 S E3,E2+NT
L25      499857 S E8+NT OR E9+NT OR E10+NT
L26          88 S L23 AND L24
L27          27 S L23 AND L25
L28         102 S L26,L27
                E CALIBRATION/CT
                E E3+ALL
L29        4119 S E1+NT
                E E7+ALL
L30          20 S L29 AND L23
L31         107 S L28,L30
                E SIMULATION/CT
                E E8+ALL
L32       67604 S E3-E6,E2+NT
                E SIMULATION/CT
L33      191224 S E3+NT OR E5+NT OR E20+NT OR E35+NT
L34        1315 S E55+NT
L35        1786 S L20 AND L32-L34
L36         127 S L35 AND L24,L25
L37         450 S L23,L31,L36
L38          32 S L37 AND (17 OR 18)/SC,SX
L39           5 S L38 AND (9 OR 18)/SC
L40           1 S L39 AND P/DT
L41          76 S L37 AND (?DIABET? OR ?GLYCEM? OR ?GLYCAEM?)
L42          75 S L41 NOT L38
L43          56 S L42 AND (ALGORITHM? OR METHOD? OR ASSESSMENT OR GRAPH? OR CUR
L44           1 S L42 AND INDIVIDUAL ANALYSIS
L45         148 S L37 AND 9/SC NOT L10,L40,L43,L44,L42
L46           4 S L45 AND BIOLOGICAL FLUID
L47          18 S L45 AND (NONINVAS? OR NON INVAS?)
L48          18 S L45 AND (MODEL OR REFERENCE)/TI
L49           0 S L37 AND 9/SC NOT L10,L4,L42-L44,L45
L50           3 S L37 AND 18/SC,SX
L51           1 S L50 AND PATIENT
L52           2 S L10,L40,L51
L53          56 S L43,L44 NOT L52
                SEL DN 4 8 18 21-23 31-33,35,40,53-56
L54          15 S L53 AND E1-E15
L55          17 S L52,L54
L56      116445 S L3 AND L11,L12
L57       13349 S L56 AND L24,L25
L58          87 S L57 AND L23
L59          40 S L57 AND L29
L60          93 S L57 AND L32-L34
L61         195 S L58-L60
L62         140 S L61 AND (9 OR 18)/SC,SX
L63          55 S L61 NOT L62
L64           8 S L63 AND (CONTROL? OR QUANTI? OR THERAP?)/TI
L65           1 S L64 AND (MODEL AND INSULIN AND GLUCOSE AND SECRETION?)/TI
L66          70 S L62 NOT L45
L67          37 S L66 NOT L42
L68          18 S L55,L65
L69        1689 S L1(L)(ANST/RL OR ANT/RL) AND L11
L70         120 S L69 AND L24,L25
L71          13 S L69 AND L23
L72           5 S L69 AND L32-L35
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L73          125 S L70-L72 NOT L42,L45,L53,L61
L74            0 S L73 AND 18/SC,SX
L75           17 S L73 AND 17/SC,SX
L76          109 S L73 AND 9/SC,SX
L77           10 S L73 NOT L75,L76
                 SEL DN L76 32
L78            1 S E16
L79           19 S L68,L78 AND L3-L10,L11-L78

     FILE 'REGISTRY' ENTERED AT 09:03:43 ON 26 NOV 2001

     FILE 'HCAPLUS' ENTERED AT 09:03:55 ON 26 NOV 2001

     FILE 'BIOSIS' ENTERED AT 09:04:17 ON 26 NOV 2001
L80       139102 S L1
L81       130344 S L2
L82         1941 S L80,L81 AND *04500/CC
L83         1160 S L82 AND 13004/CC
L84           91 S L82 AND 13220/CC
L85           17 S L82 AND 13218/CC
L86           78 S L83 AND L84,L85
L87            1 S L86 AND CALCULATE/TI
L88           29 S L84-L85 NOT L86
L89          939 S L82 AND 17008/CC
L90          233 S L82 AND 22016/CC
L91          952 S L89,L90
L92          707 S L91 AND L83-L85 NOT L86,L88
L93          100 S 132?/CC AND L92
L94           15 S L93 AND MATHEMAT? MODEL?
L95            4 S L94 NOT AB/FA
L96           11 S L94 NOT L95
L97            1 S L96 AND DIAGNOS? VALUE
L98            2 S L87,L97

     FILE 'BIOSIS' ENTERED AT 09:16:10 ON 26 NOV 2001
                SET COST ON
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